# PRACTICE 1

## Exercise 1:

Let $S = \{a, b\}$ and $T = \{1, 2, 3\}$.

1. What is $S \cap T$?
2. What is $T \cap S$?
3. What is $S \cup T$?
4. What is $T \cup S$?
5. What is $S - T$?
6. Provide two subsets of $T$.
7. What are $|S|$ and $|T|$ equal to?
8. How many subsets does $T$ have?
9. How many subsets does $S$ have?
10. Compute $S \ X \ T$?
11. Compute $T \ X \ S$?
12. Is $A \ X \ B = B \ X \ A$ for all sets $A$ and $B$?
13. What are $|S \ X \ T|$ and $|T \ X \ T|$ equal to?
14. Is $|A \ X \ B| = |B \ X \ A|$ for all sets $A$ and $B$?
15. Define a relation from $S$ to $S$ by a set.
16. Define a relation from $S$ to $T$ by a set.
17. Define a relation from $T$ to $S$ by a set.
18. How many relation from $S$ to $S$ are there?
19. How many relation from $S$ to $T$ are there?

## Exercise 2:

Let $S = \{(a, b)\}$ and $T = \{1, 2, 3\}$.

1. What is $S\ X\ T$?
2. What is $T\ X\ S$?
3. What is $S\ X\ S$?
4. What is $T\ X\ T$?

## Exercise 3:

1. Represent the relation *Student* by a table.

   $Student = \{(111, Leon, Paris, 18), (121, Dave, Chicago, 15), (122, John, New\,York, 13), (110, Paul, Paris, 19), (75, John, Hong\,Kong, 18), (150, Caesar, Boston, 22)\}$

2. The number of items of the relation *Student* equals the number of ..... of the table.

3. Is it true that:

   "The name of the student with id 75 is John. He is from Hong Kong and he's 18 years old."?

4. Is it true that:

   "The name of the student with id 150 is John. He is from Boston and he's 22 years old."

5. Provide names for the **attributes** of the relation *Student*.

   The number of attributes of the relation *Student* equals the number of ..... of the table.

6. Provide the **domain** of each of the attributes.